APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,700	06/28/2001	Gopala Krishna R. Kakivaya	MS174297.1	5155

7590 01/17/2006		EXAMINER
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ART UNIT	PAPER NUMBER
2195	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/894,700	R. KAKIVAYA ET AL.
	Examiner	**Art Unit**	
	Syed J. Ali	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _05 October 2005_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-34_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _28-31_ is/are allowed.

6)☒ Claim(s) _1-18,22-27 and 32-34_ is/are rejected.

7)☒ Claim(s) _19-21_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _08 June 2001_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This office action is in response to the appeal brief filed October 5, 2005. Claims 1-34 are presented for examination.

2.   The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Objections

3.   **Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.**

4.   As per claim 3, "calling" an initialization method to determine if initialization will "generate" a deadlock is not limiting upon "running" the initialization method to determine if initialization will "produce" a deadlock. In other words, claim 3 merely rewords the same limitation presented in claim 1.

5.   **Claims 4 and 9 are objected to because of the following informalities:**

   a.   In line 1 of claim 4, "at least one of one of" should read "at least one of".

   b.   In line 1 of claim 9, a comma should follow "claim 8".

   Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7.   **Claims 5-7, 15-16, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

8.   As per claim 5, there is a lack of antecedent basis for the term "the initialization method detector" in line 1. Claims 6-7 are indefinite for depending from an indefinite claim.

9.   As per claims 15-16, the preambles indicate that the claims are directed to a computer readable medium containing "computer executable components of a system". However, the transitional phrases preface recitation of the elements of the system, thereby raising doubt as to whether the limitations relate to elements of the system or the computer executable components of the system. It appears that it would be more appropriate for the language of "the system comprising" to read "the computer executable components comprising." Alternatively, claims 27 and 31 are similarly structured computer readable medium claims that are in the proper form and may provide a model for redrafting indefinite claims 15-16.

10.   As per claim 32, there is a lack of antecedent basis for the term "the method" in line 2.

As the claim is directed to a system, substituting the term "system" for "method" would rectify

the problem.

Claim Rejections - 35 USC § 101

11.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

12.   **Claims 1-14 and 33-34 are rejected under 35 U.S.C. 101 because the claimed**

invention is directed to non-statutory subject matter.

13.   As per claim 1, the claimed system is non-statutory as it is not tangibly embodied, in that

it fails to include any hardware as part of the system.   The system is software per se, i.e.

implemented entirely in software.   Claims 2-14 are rejected for at least the same reasons as

presented for their parent claim, as they fail to present any limitations that resolve the

deficiencies of the claim from which they depend.

14.   As per claims 33-34, the claimed "data packet[s]" are non-statutory as they are not

tangibly embodied, as the "data packet" is merely a set of fields.

Claim Rejections - 35 USC § 103

15.   **Claims 1-11, 15, 17-18, 22-27, and 32-34 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Borger et al. ("Initialization Problems for Java") (hereinafter Borger) in

view of DeMartini et al. ("A Deadlock Detection Tool for Concurrent Java Programs")

(hereinafter DeMartini).

16.   As per claim 1, Borger teaches the invention as claimed, including a system for

mitigating problems associated with automatic execution of initialization code (Abstract), the

system comprising:

an initialization method activator that calls a class initialization method at a pre-

determined execution point (§§ 1, 3).

17.   DeMartini teaches the invention as claimed, including a deadlock analyzer that

determines whether running the class initialization method will produce a deadlock (pgs. 581-83,

589-90, 595-97).

18.   Although Borger addresses the problems with automatic class initialization, including the

potential for deadlock when there is concurrent class initialization (§§ 1, 5), Borger does not

provide a solution to avoid the deadlock. DeMartini teaches another Java programming system,

including a deadlock detection tool for concurrent Java threads. Therefore, it would have been

obvious to a person having ordinary skill in the art to combine Borger and DeMartini since both

teach multithreaded Java programming systems that address deadlock problems, wherein

DeMartini provides a special tool to solve the deadlock problem discussed by Borger.

19.   As per claim 2, Borger teaches the invention as claimed, including the system of claim 1,

where the initialization method activator checks whether a class is initialized and, if the class is

not initialized, calls the initialization method (§ 1).

20.   As per claim 3, DeMartini teaches the invention as claimed, including the system of

claim 2, where the deadlock analyzer determines whether calling the class initialization method

will generate a deadlock (pgs. 581-83, 589-90, 595-97).

21.   As per claim 4, Borger teaches the invention as claimed, including the system of claim 3,

where the pre-determined execution point is at least one of a caller's just in time compilation

time, a callee's just in time compilation time, an initial field access time, an initial method access

time, an initial static field access time and a first access of pre-compiled code where no just in

time compilation occurs (§ 1).

22.   As per claim 5, Borger teaches the invention as claimed, including the system of claim 1,

where the initialization method detector associates initialization check code with one or more

components associated with a runtime environment, where the initialization check code

determines whether a class has been initialized (§§ 1-3).

23.   As per claim 6, DeMartini teaches the invention as claimed, including the system of

claim 5, where the initialization check code determines whether calling the class initialization

method will generate a deadlock, and if a deadlock will be generated, to resolve the deadlock

(pgs. 578, 583, 601-02).

24.   As per claim 7, Borger teaches the invention as claimed, including the system of claim 6,

where the initialization check code is run at one of a caller's just in time compilation time, a

callee's just in time compilation time, a first field access time, a first method access time, a first

static field access time and a first access of pre-compiled code where no just in time compilation

occurs (§ 1).

25.   As per claim 8, DeMartini teaches the invention as claimed, including the system of

claim 1, where the deadlock analyzer analyzes a wait for graph (pg. 597).

26.   As per claim 9, DeMartini teaches the invention as claimed, including the system of

claim 8, where the deadlock analyzer resolves a deadlock associated with running the class

initialization method (pgs. 578, 583, 601-02).

27.   As per claim 10, DeMartini teaches the invention as claimed, including the system of

claim 9, where the deadlock analyzer adds and/or removes or more nodes and/or arcs from the

wait for graph (pgs. 592-94).

28.   As per claim 11, DeMartini teaches the invention as claimed, including the system of

claim 8, further comprising a semantic analyzer that analyzes a semantic type associated with the

class initialization method, where the semantic analyzer provides information concerning a

desired initialization check time to the initialization method activator (pgs. 595-97).

29.   As per claims 15 and 17-18, the combination Borger and DeMartini teach the claimed

features, as discussed above for the claim grouping of claims 1-11. The limitations presented in

the present claims are similar or identical to those presented in claims 1-11.

30.   As per claim 22, DeMartini teaches the invention as claimed, including the method of

claim 17, where determining whether calling the initializing method will generate a deadlock

comprises:

        attempting to acquire an initialization lock associated with the class to be initialized, and

if the initialization lock cannot be acquired, identifying a holding thread that is holding the

initialization lock (pgs. 587-590, 597);

        locating a node associated with the holding thread, where the node is located in a wait for

graph (pgs. 587-590, 597); and

        analyzing the wait for graph to determine whether a deadlock exists (pg. 597).

31.   As per claim 23, DeMartini teaches the invention as claimed, including the method of

claim 22, where analyzing the wait for graph comprises traversing the wait for graph starting at

the node associated with the holding thread and determining whether a cycle is detected in the

wait for graph (pgs. 587-590, 597).

32.   As per claim 24, DeMartini teaches the invention as claimed, including the method of

claim 23, where resolving the deadlock comprises:

        acquiring a lock associated with the wait for graph (pgs. 587-590, 597);

if a detecting thread that identifies the deadlock previously added one or more arcs and/or nodes to the wait for graph, removing the one or more arcs and/or nodes from the wait for graph (pgs. 592-94);

releasing the lock associated with the wait for graph (pgs. 587-590, 597); and

the detecting thread interacting with the class as though the class was initialized (pgs. 595-97).

33.   As per claim 25, DeMartini teaches the invention as claimed, including the method of claim 17, where determining whether calling the initializing method will generate a deadlock comprises:

an acquiring thread attempting to acquire an initialization lock associated with the class to be initialized, and if the lock cannot be acquired, determining whether there is a thread waiting for the acquiring thread to complete its processing and release the initialization lock (pgs. 587-590, 597).

34.   As per claim 26, DeMartini teaches the invention as claimed, including the method of claim 25, where resolving the deadlock comprises:

if it was determined that there was a thread waiting for the acquiring thread to complete its processing and release the initialization lock, then returning and interacting with the partially initialized state of the class as though the class were initialized (pgs. 595-97), otherwise blocking until the class becomes initialized (pgs. 587-590, 597).

35.   As per claim 27, the combination Borger and DeMartini teach the claimed features, as

discussed above for the claim grouping of claims 17-18 and 22-26. The limitations presented in

the present claims are similar or identical to those presented in claims 17-18 and 22-26.

36.   As per claim 32, the combination Borger and DeMartini teach the claimed features, as

discussed above for the claim grouping of claims 17-18 and 22-26. DeMartini teaches the

additional limitations of claim 32 relating to identifying a constructor associated with a class and

adding code into one or more components generated by a runtime environment, and detecting

deadlocks based on information in the constructors (pgs. 590-91).

37.   As per claims 33-34, the combination Borger and DeMartini teach the claimed features,

as discussed above for the claim grouping of claims 1-11. The limitations presented in the

present claims are similar or identical to those presented in claims 1-11 except that the data is

encapsulated in a data packet. Specifically, the fields of the data packet appear to be structured

in a manner similar or identical to a wait for graph. Accordingly, the discussion of claims 1-11 is

incorporated by reference and forms the basis for rejection of claims 33-34.

Allowable Subject Matter

38.   **Claims 12-14 would be allowable would be allowable if: (1) rewritten in independent**

form including all of the limitations of the base claim and any intervening claims, and (2)

the non-statutory issues presented for claim 1 are resolved.

39.   **Claim 16 would be allowable if the indefiniteness issues presented above are resolved.**

40.   **Claims 19-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

41.   **Claims 28-31 are allowed.**

Response to Arguments

42.   **Applicant's arguments with respect to claims 1-18, 22-27, and 32-34 have been considered but are moot in view of the new grounds of rejection.**

Conclusion

43.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J. Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T. An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
January 5, 2006

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